

# Machine Learning with scikit-learn

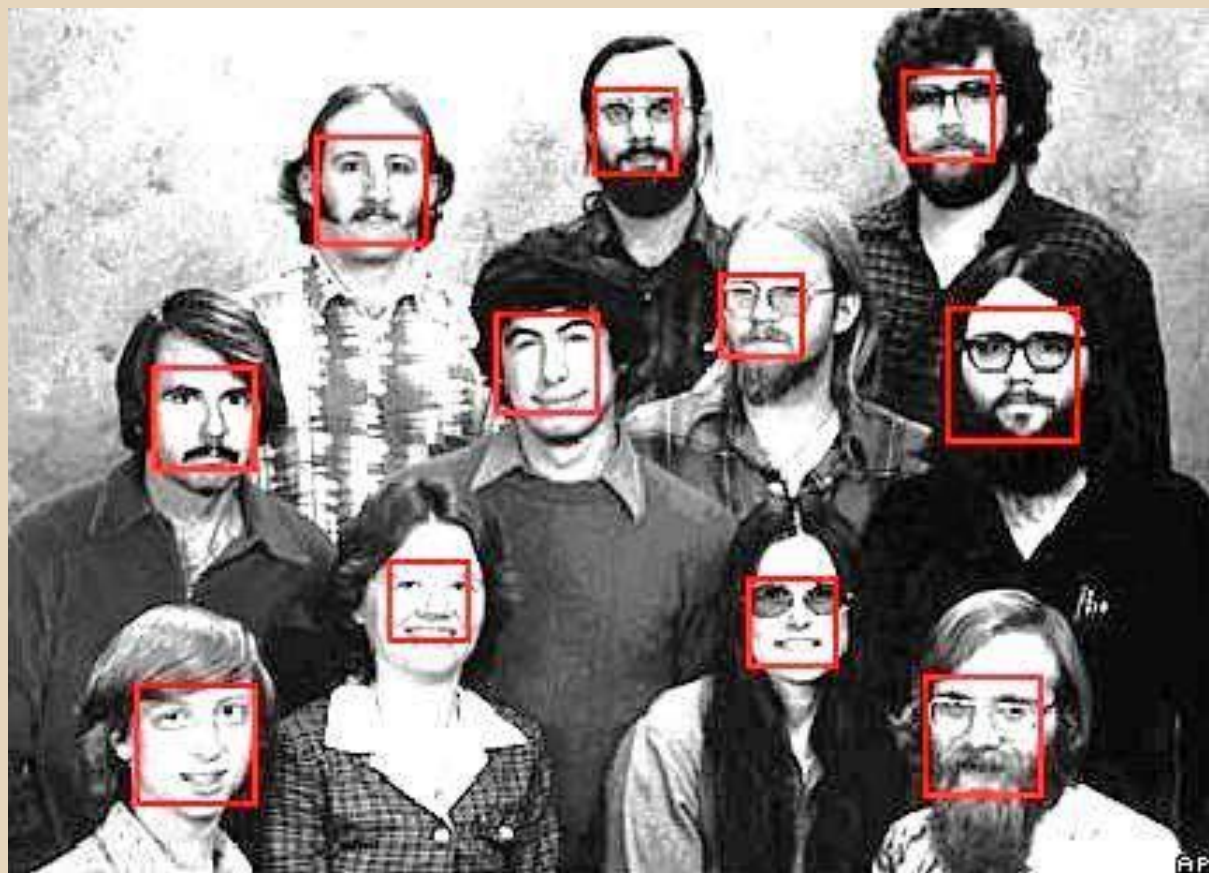
Andreas Müller

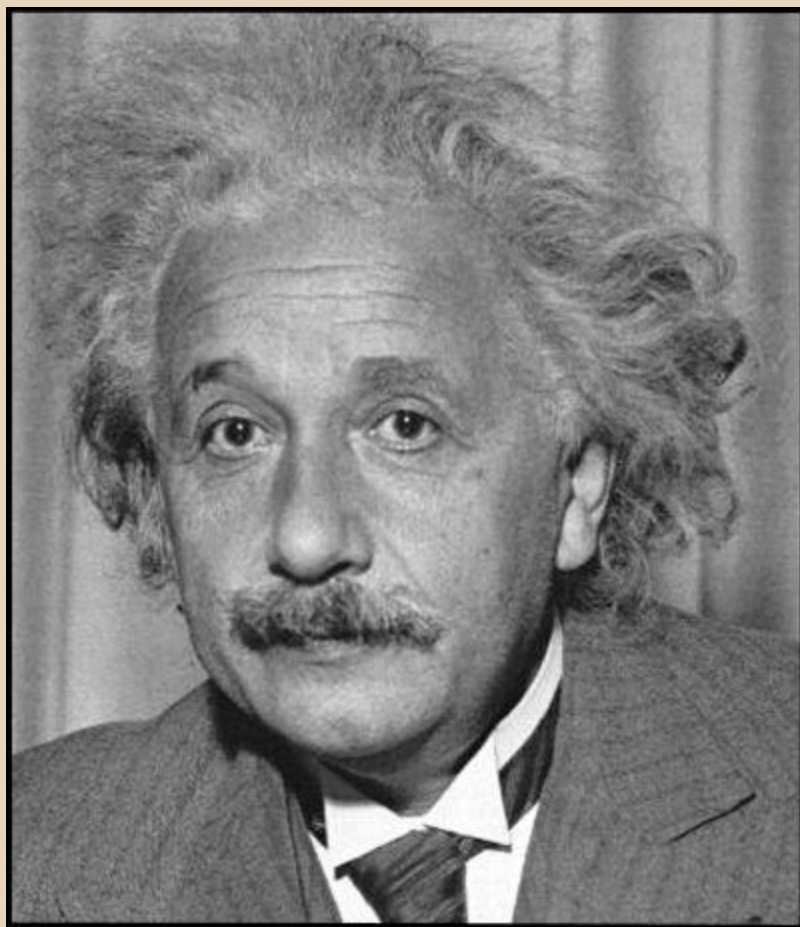
[amueller@ais.uni-bonn.de](mailto:amueller@ais.uni-bonn.de)

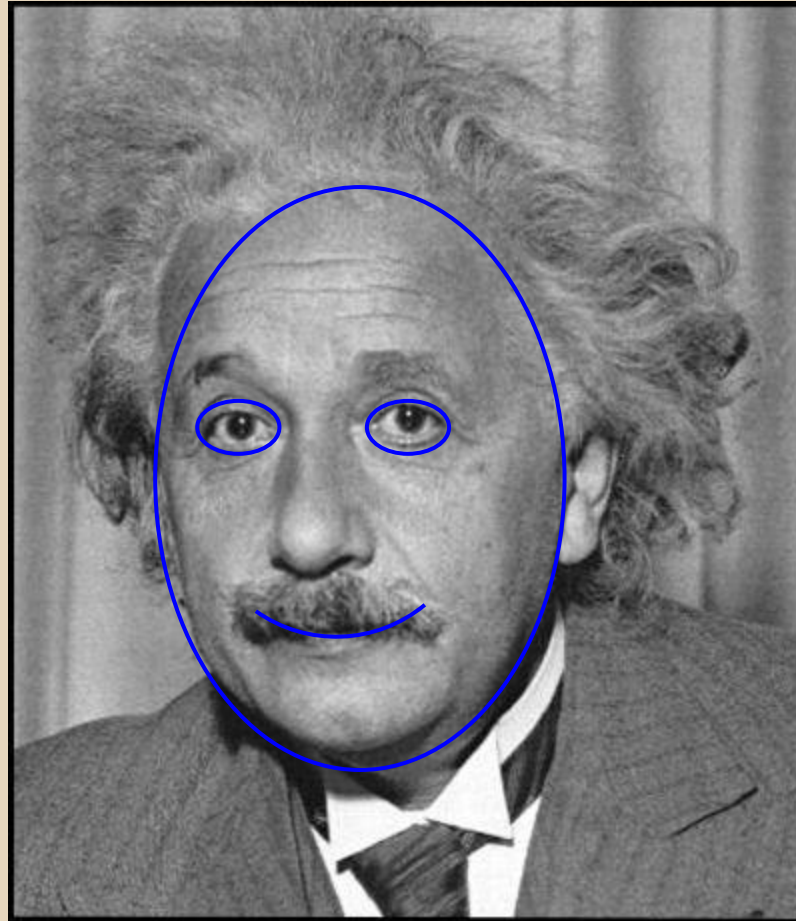
[peekaboo-vision.blogspot.com](http://peekaboo-vision.blogspot.com)

why learn?

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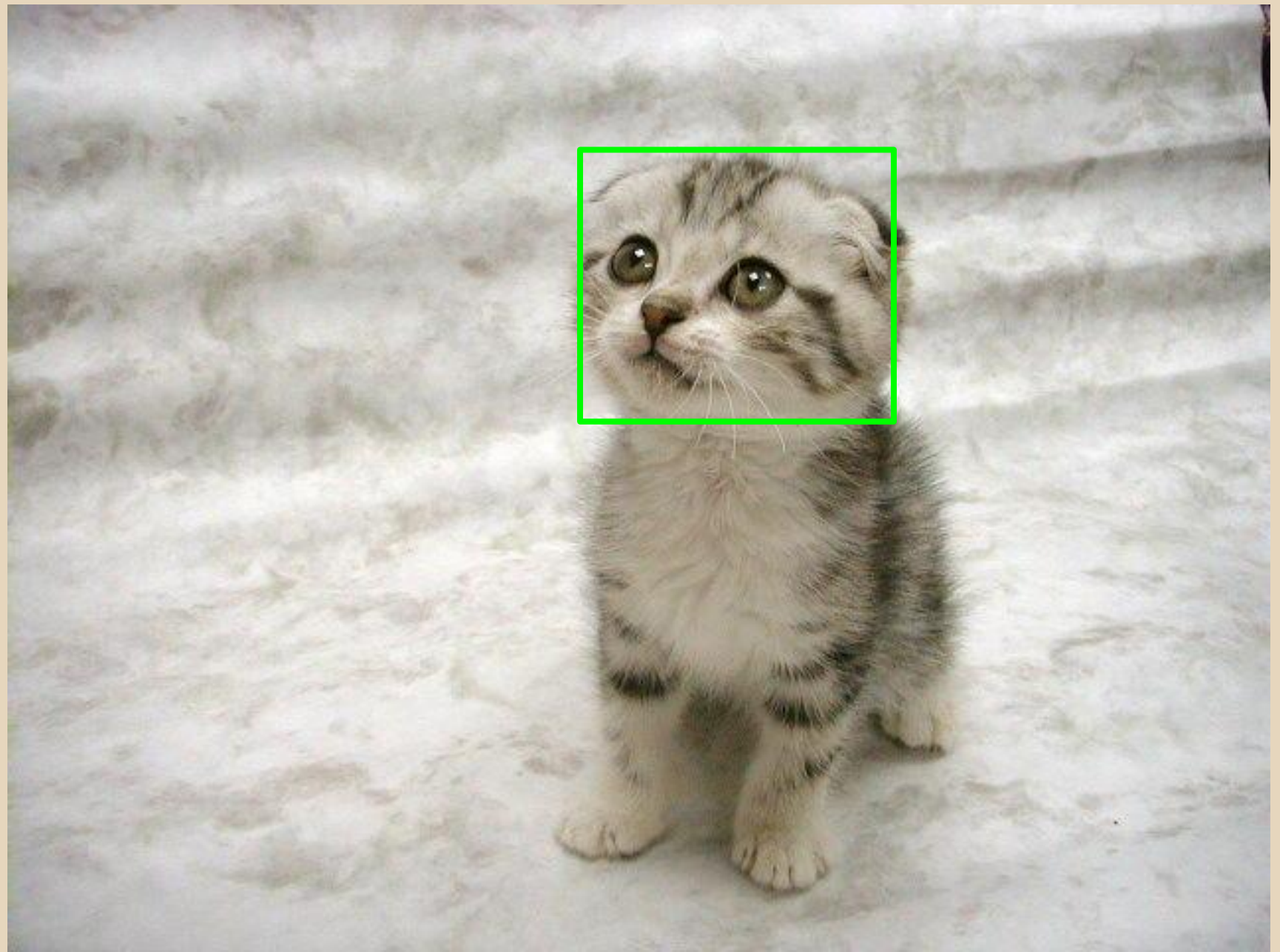




VS









# why learn?

Better than you could do it!  
Easy adaption to new tasks!

what can we learn

# Classification

Hi friends,

I have finally released 0.12.1.

The tarball can be found on pypi:

<http://pypi.python.org/pypi/scikit-learn>

I am looking for volunteer to build windows binaries. I can't really give instruction, as I have never shipped windows binaries. The core idea is to run 'python setup.py bdist\_wininst'. I know that they are caveat when doing these, as we had problem with them a while ago, but I am not sure how to proceed. Vlad, Fabian, any help with instructions?

Beside, I am going to bed, so I think that the binaries will be uploaded tomorrow

Gael

Check out what I'm talking about here: <http://bit.ly/T0ZZ7E>

Hi, my dearie, We're doing pretty good here, how are you? You'll never believe it--I've been chubby for SO long I stopped those stupid fad diets and still hit my target weight! I wish I'd learned about this sooner. Oprah's guy? Dr. Oz? He says amazing things about this. Go ahead, be skeptical, but when you see me in my bikini, you'll KNOW it works lolol! Take care! Talk to you soon!

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Spam



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[Machine Learning | Coursera](#)  
[jan2012.ml-class.org/](http://jan2012.ml-class.org/)  
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[Machine Learning](#)  
[www.springer.com](http://www.springer.com) > ... > Computer Science > Artificial Intelligence  
**Machine Learning** is an international forum for research on computational approaches to learning. The journal publishes articles reporting substantive results on ...

[Lecture 1 | Machine Learning \(Stanford\) - YouTube](#)  
[www.youtube.com/watch?v=UzxYlbK2c7E](http://www.youtube.com/watch?v=UzxYlbK2c7E)  
22 Jul 2008 - 69 min - Uploaded by StanfordUniversity  
Lecture by Professor Andrew Ng for **Machine Learning** (CS 229) in the Stanford Computer Science ...

[More videos for machine learning >](#)

[Introduction to Machine Learning](#)  
[robotics.stanford.edu/~nilsson/mlbook.html](http://robotics.stanford.edu/~nilsson/mlbook.html)  
From this page you can download a draft of notes I used for a Stanford course on **Machine Learning**. Although I have tried to eliminate errors, some undoubtedly ...

[CS 229: Machine Learning](#)  
[cs229.stanford.edu/](http://cs229.stanford.edu/)  
Problem Set 2 has been released! new We compiled a list of course project suggestions. If there is a project that interests you, contact the project suggestor to ...

[Machine Learning \(Theory\)](#)  
[hunch.net/](http://hunch.net/)  
5 days ago - A collaborative **machine learning** weblog by John Langford.

[Machine Learning | Stanford Video Course](#)  
[www.academicearth.org/courses/machine-learning](http://www.academicearth.org/courses/machine-learning)  
Free video course on **Machine Learning** by Andrew Ng of Stanford. Note: This course is offered by Stanford as an online course for credit. It can be taken ...



# Recommendations

amazon.de

Andreas' Amazon | Angebote | Gutscheine | Hilfe | Impressum

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Alle

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Amazon Cloud Drive

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App-Shop für Android

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kindle **paperwhite**  
WLAN 129€ | 3G 189€



kindle **fire HD**  
16 GB 199€ | 32 GB 249€

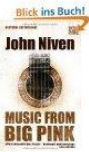


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Sie haben angesehen:


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**Music from Big Pink**  
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John Niven, Stephan Glietsch  
Taschenbuch  
★★★★☆ (8)  
EUR 9,99




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John Niven  
Taschenbuch  
★★★★☆ (13)  
EUR 7,99




**Gott bewahre**  
John Niven, Stephan Glietsch, Jörn...  
Taschenbuch  
★★★★☆ (156)  
EUR 19,99



**Kill Your Friends**  
John Niven, Stephan Glietsch  
Taschenbuch  
★★★★☆ (65)  
EUR 12,00



**Sick City**  
Roman  
Tony O'Neill, Stephan Pörtner  
Taschenbuch  
★★★★☆ (3)  
EUR 8,99



**Der Gejagte**  
Roman  
Charlie Huston, Viktoria Rupprecht, ...  
Taschenbuch  
★★★★☆ (15)  
EUR 7,95



**Classic Albums (2in1)**  
the Band  
Audio CD  
★★★★☆ (1)  
EUR 9,99

# Many more

- Regression
- Clustering
- Dimensionality Reduction
- Feature Selection
- ...

# How do we learn?

## Data representation

# Data as Vectors : E-Mails

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weight	binaries	python	diet	when
0	3	2	0	1 ...

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I am Check out what I'm talking about here: <http://bit.ly/T0ZZ7E>

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0	3	2	0	1	...
1	0	0	1	1	...



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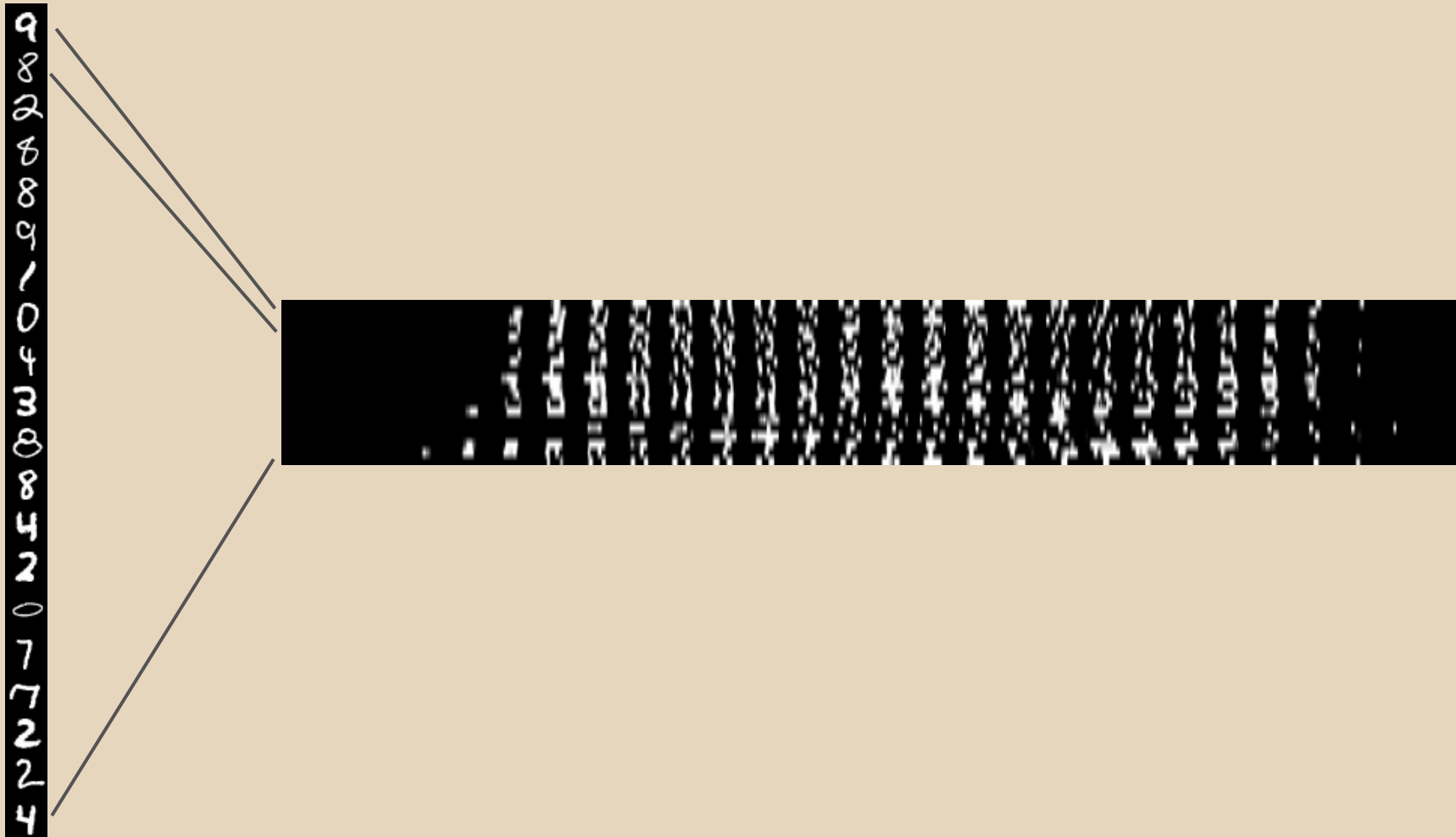
weight	binaries	python	diet	when
0	3	2	0	1 ...
1	0	0	1	1 ...

Data for learning:

samples >> 1000

1000 < dictionary size < 100.000

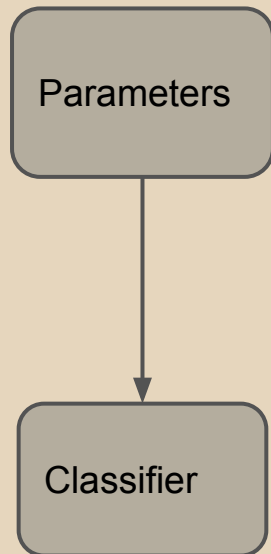
# Data as Vectors : Digits



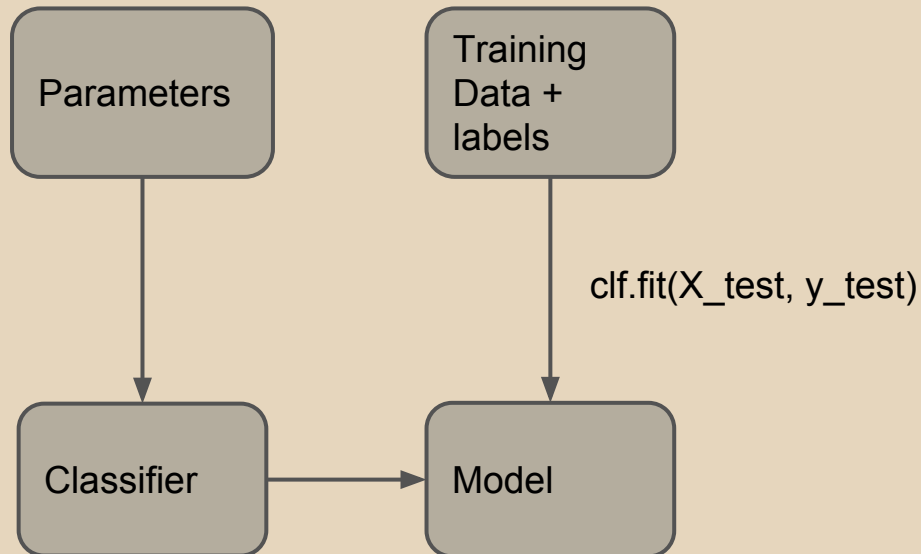
# How do we learn?

## Workflow

# Work flow (classification)

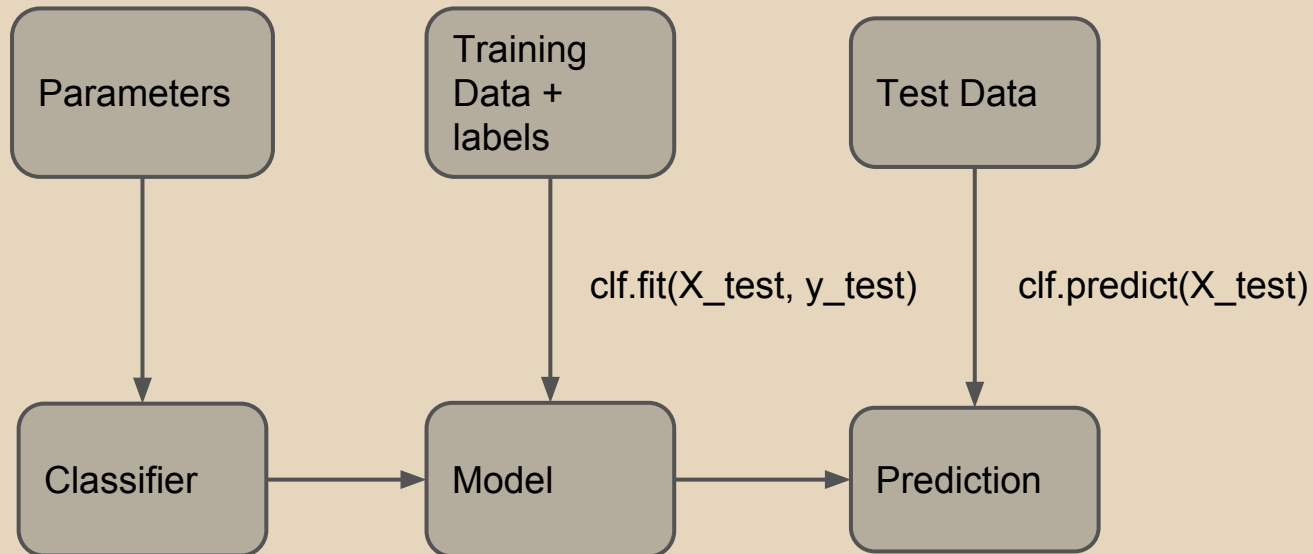


# Work flow (classification)

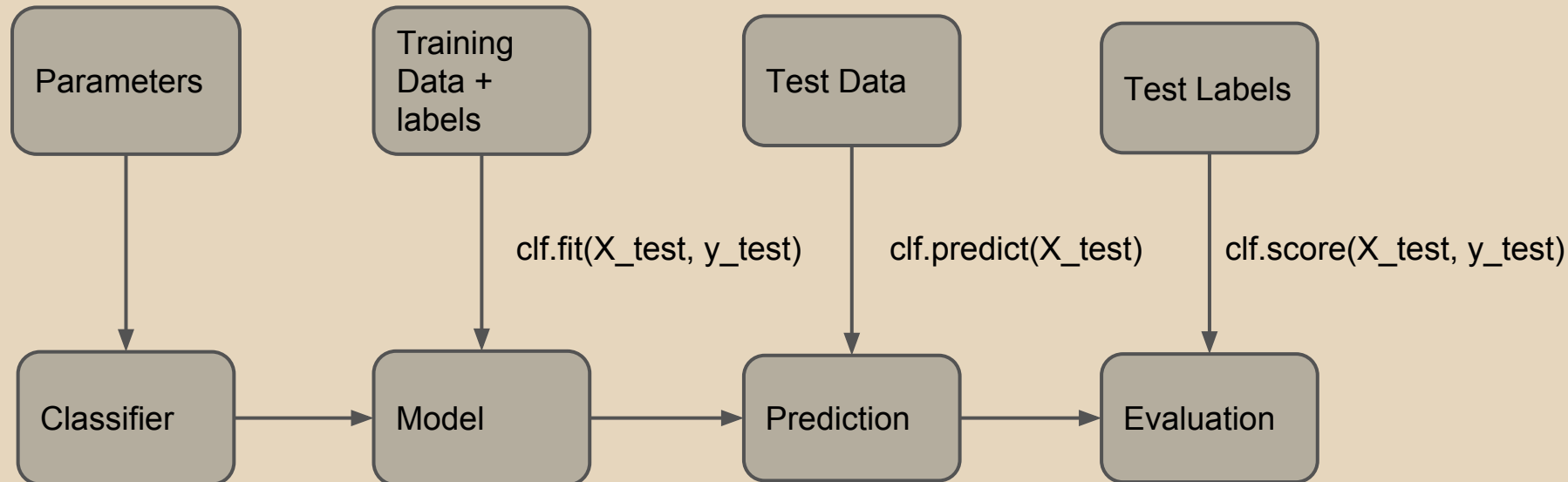




# Work flow (classification)



# Work flow (classification)



# Resources

<http://scikit-learn.org/dev>

GO THERE!

The screenshot shows the scikit-learn website's 'Examples' page. The header includes the scikit-learn logo, navigation links (Download, Support, User Guide, Examples, Reference), and a Google Custom Search bar. The left sidebar contains links for 'Previous' and 'Next' versions, a 'Citing' section, and a list of 'Examples' including General examples, Clustering, Covariance estimation, Dataset examples, Decomposition, Ensemble methods, Tutorial exercises, and Gaussian Process for Machine Learning. The main content area is titled 'Examples' and features a 'General examples' section. This section includes a description of general-purpose and introductory examples, a grid of small plots labeled 'Classifiers Comparison', a 'Confusion matrix' plot, a 'Plot classification probability' plot, a 'Pipelining: chaining a PCA and a logistic regression' plot, and a 'Comparing feature selection' plot.

scikit learn

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Previous 8.26.3, sklearn... Next Plot classificat...

This documentation is for scikit-learn **version 0.13-git** — Other versions

Citing

If you use the software, please consider citing scikit-learn.

This page

**Examples**

- General examples
- Examples based on real world datasets
- Clustering
- Covariance estimation
- Dataset examples
- Decomposition
- Ensemble methods
- Tutorial exercises
- Gaussian Process for Machine Learning

## Examples

### General examples

General-purpose and introductory examples for the scikit.

Classifiers Comparison

Confusion matrix

Plot classification probability

Pipelining: chaining a PCA and a logistic regression

Comparing feature selection

# Talk Resources

Notebook sources, pdf, etc ..

[gist.github.com/amueller](https://gist.github.com/amueller)

For Rendered Notebook:

[bit.ly/UaArq3](https://bit.ly/UaArq3)

.. or follow me on twitter:

[@t3kcit](https://twitter.com/t3kcit)



# Questions ?

Also: come sprint with me!